St Leonards' Court, Sandridge, Hertfordshire (the Site)

Remediation statement under section 78H(7) of the Environmental Protection Act 1990 (EPA)

The Site was designated by St Albans City and District Council (SADC) as contaminated under section 78B(1) EPA on 20th June 2002.

The Environment Agency (EA) is the regulatory authority for the Site in accordance with a notice of SADC dated 8th July 2002 under section 78C(1)(b) EPA.

The EA has a duty under section 78E(1) EPA to serve a remediation notice specifying what a person is to do by way of remediation and the periods within which he is required to do each of the things so specified.

Under section 78H(5)(b) EPA the EA is precluded from serving a remediation notice if it is satisfied that appropriate things are being, or will be, done by way of remediation without the service of a remediation notice on that person. To the extent that the APs and the EA are in agreement as set out herein the EA is satisfied that this voluntary remediation statement satisfies that requirement.

The appropriate persons for the Site are Redland Minerals Limited and Crest Nicholson Residential Limited (the Appropriate Persons) under a remediation notice of 22nd July 2009.

This remediation statement sets out the actions which the Appropriate Persons have agreed to take and which satisfy the EA that things will be done by way of remediation.

This remediation statement will be regulated in accordance with Part 2A EPA and the Department for Food Environment and Rural Affairs' Contaminated Land Statutory Guidance of April 2012.

At the end of the time limits set out in actions 8, 9 and 10(d)(iii) the EA will decide if it needs to serve another remediation notice or to negotiate another remediation statement with the Appropriate Persons.

The interrelationship between the actions in the Voluntary Scheme is depicted in the Illustrative Flow Chart in Appendix 1. The actions are iterative and not sequential.

The apportionment of the costs has been agreed between the Appropriate Persons is set out in Appendix 2.

The Actions which the Appropriate Persons will do by way of remediation under this remediation statement are:

Assess the feasibility of abstracting and treating the contaminated groundwater to allow connection to: a) Water Company water pipes and/or connection to an injection borehole(s) and/or surface water, b) Water Company sewerage assets.

1. An assessment action will be undertaken as below for each of (a) and (b) above, unless otherwise agreed by the Agency in writing:

a. Assess the feasibility of abstracting and treating groundwater from segments within the bromate plume between SLCourt and Bishops Rise to be agreed with the Environment Agency. Treatment techniques to consider are:

(A) Granular Activated Carbon (GAC)
(B) Ion Exchange
(C) Chemical reduction of bromate
(D) Combinations of treatment options, not necessarily limited to A, B and C.

In each case:

(i) Assess the before and after treatment concentrations for a range of groundwater concentrations found within segments of the plume, by bench tests, results of a literature search and/or communications with the water industry, to provide reliable estimates;
(ii) Estimate via appropriate technical assessment the potential effect on bromate concentrations within *(a)* the part of the plume between SLCourt and Bishops Rise and *(b)* at the monitoring points listed in Table 4 and Table 5.
(iii) Assess where appropriate: residence times; the availability of appropriate businesses where the media, (A) GAC and (B) Ion Exchange resin, can be sent for regular regeneration;
(iv) Assess plant installation costs for (A), (B), (C) and (D) above;
(v) Assess annual running costs for (A), (B), (C) and (D) above.
(vi) Assess the feasibility and cost of running pilot plant scale tests for treatments selected from the results of assessments (i)–(iv) above.

b. Determine a list of potentially technically suitable locations to consider in Assessment Action 2, based on likely potential effect on bromate concentrations within *(a)* the part of the plume between SLCourt and Bishops Rise and (*b)* at the monitoring locations listed in Table 4 and Table 5.

c. Report on the outcome of 1a and 1b above to the Agency in writing and identify the options to be taken forward for further consideration in Assessment Action 4.

This Action will be completed within 5 months of the date of this remediation statement unless otherwise agreed in writing with the Environment Agency, acting reasonably and having regard to the availability of information from the Water Companies, namely Affinity Water Limited, or any successor(s) to its water undertaking, (**"Affinity Water Ltd"**) and Thames Water Utilities Limited, or any successor(s) to its water and/or sewerage undertakings (**"Thames Water Utilities Ltd"**).

Assess locations in the vicinity of Bishops Rise and up gradient for a treatment plant and connection to Water Company water pipes

2. An Assessment Action will be undertaken as below, unless otherwise agreed by the Agency in writing:

a. Assess locations derived from Assessment Action 1 for the installation of a treatment plant which could be installed and operated to allow connection to Affinity's raw water supply pipes and/or connection to an injection borehole(s), surface water and/or the sewer network or to identify and facilitate an alternative use for the treated water.

b. For each treatment plant location, and each treatment method in Assessment Action

1, estimate costs including:
   (i) Acquiring legal rights to carry out the operation at that location;
   (ii) Installing treatment equipment;
   (iii) Providing a pipeline connection from the abstraction borehole(s) to the location;
   (iv) Providing a pipeline connection to a suitable water pipe on the Water Company system which has adequate capacity for the anticipated flow;
   (v) Recurring annual operations;
   (vi) Providing and maintaining injection boreholes;
   (vii) Providing a connection to a suitable sewer.

c. For each treatment plant location estimate the maximum rate of abstraction that could reasonably be achieved and assess the likely rate of removal of bromate and bromide from the aquifer.

d. For each treatment method and location identify the benefits and limitations. Including review of the estimated concentrations in Assessment Action 1a(ii) above.

e. Identify any alternatives to the arrangements outlined in 2a to 2d above that might achieve the same objective of removing bromate and bromide from the aquifer and dealing with the abstracted water.

f. Report the outcome of 2a to 2e above to the Agency in writing and identify the options to be taken forward for further consideration in Assessment Action 4.

This Action will be completed within 7 months of the date of this remediation statement unless otherwise agreed in writing with the Environment Agency, acting reasonably and having regard to the availability of information from the Water Companies.

Obtain and review further relevant information on water supply infrastructure, raw water treatment, operational management of the water supply and wastewater management from Thames Water Utilities Limited and Affinity Water Ltd.

3. An Assessment Action will be undertaken as below, unless otherwise agreed by the Agency in writing:

a. Request comprehensive and detailed information from the Water Companies on the Water Companies' existing blending procedures, treatment infrastructure and treatment plant performance for the management of groundwater abstracted from the Public Water Supply locations set out in Table 4, seek to establish the concentrations of bromate and bromide which can be managed by the Water Companies when abstracting water to enable the Water Companies to continue to provide a safe water supply in accordance with applicable statutory drinking water standards, taking into account the need to allow for variability and uncertainty in future concentrations of the contaminants in the plume.
b. Request comprehensive and detailed information from the Water Companies on the Water Companies' existing water pipes and sewers within and in the vicinity of the footprint of the plume.
c. Request any other information from the Water Companies that would be beneficial to achieving the objectives of this RS.
d. Report the outcome of 3a, 3b and 3c above to the Agency in writing.

This Action will be completed within 5 months of the date of this remediation statement unless otherwise agreed in writing with the Environment Agency, acting reasonably and having regard to the availability of information from the Water Companies.

Identify the candidate Best Practicable Technique(s)

4. An Assessment Action will be undertaken as below, unless otherwise agreed by the Agency in writing:

a. Using the information gained from Assessment Actions 1, 2 and 3 above:

(i) Assess the practicality, effectiveness and durability of each of the options identified for further consideration in the reports in respect of Assessment Actions 1, 2 and 3 in relation to abstraction, treatment and management of abstracted water *(a)* within the plume between SLCourt and Bishops Rise, and *(b)* at Essendon PWS and the Northern New River Wellfield.

(ii) Identify the material uncertainties associated with each of 4a(i)*(a)* and 4a(i)*(b).*

(iii) Identify any alternative arrangements that would achieve the same objective of removing bromate and bromide from the aquifer.

(iv) Evaluate including by comparison of the cost benefit analysis for each option, which option(s) amount(s) to the candidate Best Practicable Technique(s) for achieving the Remedial End Point referred to in Remedial Treatment Action 10c(ii) below and provide the reasons for that assessment.

b. Based on the assessment in relation to Assessment Action 4a above consider the benefit of undertaking (a) pumping trial(s) within the contamination plume between SLCourt and Bishops Rise and/or the benefit of other practical measures, trials or assessments that would materially reduce the uncertainty associated with decision critical areas regarding the identification of the Best Practicable Technique for achieving the Remedial End Point referred to in Remedial Treatment Action 10c(ii) below.

c. Without prejudice to the need for revision of Assessment Actions 4a and 4b above, which are likely to need to be iterative, report the outcome of Assessment Actions 4a and 4b above to the Agency in writing.

d. Where the need is identified in Assessment Action 4b above for other practical measures, trials or assessments make proposals including locations, timescales and reports of the findings, to the Agency in writing. The actions shall then be implemented following the approach agreed in writing between the Agency and the APs.

Actions 4a to 4c will be completed within 8 months of completion of the report required under Assessment Actions 1, 2 and 3 above unless otherwise agreed in writing with the Environment Agency, acting reasonably and having regard to the availability of information from the Water Companies.

Following completion of Actions 4a to 4c, the APs will consider based on the available technical information, whether it is beneficial or necessary to carry out further studies to determine the Best Practicable Technique or whether the Best Practicable Technique can be determined without carrying out further studies. The APs will seek agreement with the Agency on the basis of all available information and advice. If further studies are agreed in writing as not required, the APs will not be required to carry out Actions 4d, 5 or 6, unless otherwise agreed in writing with the Agency, acting reasonably and having regard to the availability of information from the Water Companies.

If it is necessary Action 4d will be completed within 4 months of completion of the report required under Action 4c above unless otherwise agreed in writing with the Environment Agency, acting reasonably and having regard to the availability of information from the Water Companies.

The actions identified in the report prepared under Action 4d will be implemented in accordance with the timetable presented in that report.

If identified as beneficial and necessary in the report in respect of Assessment Action 4 assess scavenge pumping from location(s) within the bromate plume between SLCourt and Bishops Rise

5. An Assessment action will be undertaken as below

Assess unless otherwise agreed by the Agency in writing, acting reasonably and having regard to the outcomes of Assessment Action 4 above, for any location(s) within the bromate plume between SLCourt and Bishops Rise identified in Action 4 above:

a. Estimate the costs of:
    (i) Acquiring legal rights to carry out the operation;
    (ii) Installing suitable boreholes and pumps, or adapting the existing boreholes and pumps;
    (iii) Provide a pipeline connection to enable disposal of the abstracted water or identifying the means and associated costs of alternative management of the abstracted water;
    (iv) Recurring annual operating and other costs, including any costs related to treatment of the water to remove bromate and bromide, or reduce bromate to bromide, and the chemical loading element of any trade effluent or other changes.

b. Estimate the maximum rate of groundwater abstraction and rate of mass removal of bromate and bromide which could be achieved within the constraints above and with reference to the local hydrogeology and distribution of contaminant mass within the plume.

c. Without prejudice to the need for revision of Assessment Actions 5a and 5b above which are likely to need to be iterative, report the outcome of 5a and 5b above to the Agency in writing.

This action will be completed within 4 months of the date of completion of Action 4c above, unless otherwise agreed in writing with the Agency, acting reasonably and having regard to the availability of information from the Water Companies.

Carry out and report on any scavenge pumping trial

6. An Assessment Action will be undertaken as below:

If identified as necessary under Action 4b and having regard to the outcome of Action 5:

a. Carry out a review of the findings of Action 5 above.

b. Based on the review, proposals, including timescales, for a scavenge pumping trial shall be submitted to the Agency for approval in writing, such approval not to be unreasonably withheld, within 4 months of the date of completion of Action 5 above.

c. Carry out the agreed scavenge pumping, to find the most effective means of removing bromate and bromide, in line with an abstraction licence (if required), and dispose of the pumped water arising from the trial without significant adverse environmental effects, unless otherwise agreed with the Agency in writing.

d. The outcome of the trial shall be reported to the Agency in writing.

This action will be completed within 3 months of completion of the pumping trial under Assessment Action 6c unless otherwise agreed in writing by the Agency.

Update of consideration of the options and the Best Practicable Technique for the remediation of bromate and bromide contamination in groundwater

7. An Assessment Action will be undertaken as below, unless otherwise agreed by the Agency in writing:

a. Taking account of the information gained from Assessment Actions 1 to 6 above as applicable and the information gained from actions taken under the First Notice:
   (i) Undertake an assessment to include consideration of the contribution made by scavenge pumping at Bishops Rise and alternative and/or additional measures which might be implemented including the future options available for management of the abstracted water by the Water Companies,
   (ii) Assess or update the practicality, effectiveness and durability of each option, individually and/or in combination, as appropriate for the purpose of determining the Best Practicable Technique for achieving the Remedial End Point set out in Remedial Treatment Action 10c(ii) below (**"BPT"**);
   (iii) Consider whether the BPT is capable of achieving the current Remedial End Point (REP). If it is not, consider whether the Best Practicable Technique assessment justifies an alternative REP to that set out in Assessment Action 10c(ii), or if further investigation or testing is necessary. If an alternative REP is considered to be justified as part of the consideration of the BPT, identify and justify this alternative REP.
   (iv) Evaluate, including by comparison of the cost benefit analysis for each, which option individually and/or in combinations amounts to the BPT and provide the reasons for that assessment;
   (v) Update and refine the conceptual model as appropriate when new information is obtained;
   (vi) Assess the effectiveness of the scavenge pumping at Bishop's Rise and propose improvements to maximise hydraulic containment and contaminant removal as appropriate when new information is obtained.

b. Without prejudice to the need for the revision of Assessment Action 7a above which is likely to need to be iterative, report the outcome of 7a above to the Agency in writing by means of an update of Report F1 which identifies the Remedial End Point and the Best Practicable Technique together with the proposals and timescale for its implementation.

c. Implement the BPT in accordance with the implementation timetable following approval by the Agency.

This action will be completed within 8 months of completion of the report required under Assessment Action 4c or the completion of the reports following completion of Assessment Action 4d (other investigations) or Action 6 (pumping trial), whichever is the later date and unless otherwise agreed in writing by the Agency.

Groundwater monitoring of the bromate and bromide plumes

8. A Monitoring Action will be undertaken as below:

a. Provide quality-assured monitoring data and report it to the Agency quarterly within six weeks of sampling wherever possible taking into account the availability of information from the Water Companies at the locations identified in Table 1 below for the parameters, and at the frequencies, listed in Table 2 below, and to the detection limits, precision and bias specified in the approved Method Statement referred to in Action 8b below, unless otherwise agreed in writing with the Agency.

Table 1. Locations to be monitored under Monitoring Action 8

Location Reference	Site name	Type[1]	NGR*
080	MW2, St Leonards Court	M	TL 17070 10455
223	SLC 10, St Leonards Court	M	TL 17134 10440
082	MW4, St Leonards Court	M	TL 17121 10427
081	MW3, St Leonards Court	M	TL 17096 10435
083	MW5, St Leonards Court	M	TL 17074 10411
216	SLC03, St Leonards Court	M	TL 17080 10475
028	Orchard Garage	P	TL 17500 10300
028b	Orchard Garage MJCA BH1	M	TL 17507 10293
028c	Orchard Garage MJCA BH2	M	TL 17510 10305
028d	Orchard Garage MJCA BH3	M	TL 17561 10316
225	GW12, top of House Lane	M	TL 17152 10365
226	GW13, Harefield House	M	TL 17748 10035
227	GW14, beside Jersey Farm pond	M	TL 17754 09706
019	Nashes Farm	P	TL 18000 09600
166	Hatfield Quarry WPG16	M	TL 20241 09741
162	Hatfield Quarry WM3B	M	TL 19283 08858
061	Hatfield Quarry WM4	M	TL19661 09103
062	Hatfield Quarry WM5	M	TL 20175 09499
064	Hatfield Quarry WM7	M	TL 19900 09275
066	Hatfield Quarry WM10, lower level (P2)	M	TL 20051 09393
402	Comet Way BH5	M	TL 21760 08911
002	Hatfield Business Park	P	TL 21350 09795
001	Bishops Rise	PS	TL 22000 07700

Notes to Table 1:
*Precise locations of abstractions are masked
[1]M – monitoring borehole, P – private water supply, PS – pumping station

Table 2. Parameters to be measured and frequency of measurement

Controlled waters	Frequency	Parameters to be measured
Groundwater in, or in continuity with, the Chalk aquifer	4 times per calendar year* in January, April, July, & October	pH, EC, BrO_3, Br, Cl, Temperature, DO, Redox Potential, Water level AOD, Depth to base of borehole where feasible
Surface waters	4 times per calendar year* in January, April, July, & October	pH, EC, BrO_3, Br, Cl

Note to Table 2: * pro rata per part of calendar year

b. Update the Method Statement completed for Action G of the First Notice dated 22nd July 2009 so that it is in accordance with relevant British Standards, and paragraph c below, unless otherwise agreed in writing by the Agency. Specify in the Method Statement the precision, bias and limit of detection to be achieved for each parameter monitored. Submit the Method Statement to the Agency for approval prior to sampling commencing.

c. Analysis of samples is to be carried out by a laboratory accredited to ISO/IEC 17025:2017 and using United Kingdom Accreditation Service accredited methods, performance-tested in accordance with Water Research Centre plc (WRc) publication NS30, *'Analytical Quality Control in the Water Industry'* (WRc Report NS30, June 1989, ISBN 0902156853). The laboratory will operate a system of routine analytical quality control, preferably based on the use of control charts (see WRc Report Ref: Co4239 *'Quality Control Charts in Routine Analysis'*). Samples must be analysed within 72 hours of collection.

d. Results are to be reported to the Agency no more than six weeks after sampling and measurement, in a summarised format to be agreed in writing by the Agency, accompanied, where relevant, by laboratory certificates of analysis, which will state the associated measurement uncertainty.

This action will be continued for up to a maximum of 10 years from the date of this remediation statement or the expiry of the period referred to in Remedial Treatment Action 10d below whichever is the sooner with reviews of the need to continue monitoring and of the extent of the monitoring every 3 years or such shorter period as may be agreed in writing by the Agency.

Groundwater and surface water monitoring of the bromate plume

9. A Monitoring Action will be undertaken as below:

a. Provide quality-assured monitoring data and report it to the Agency quarterly within six weeks of sampling wherever possible taking into account the availability of information from the Water Companies in January, April, July and October at the locations identified in Table 3 below for the parameters, and at the frequencies, in Table 2 above and to the detection limits, precision and bias specified in the approved Method Statement referred to in Action 8b above, unless otherwise agreed in writing with the Agency.

b. Procedures for sampling, sample handling and sample analysis are to be as specified for Action 8 above.

Table 3. Locations to be monitored under Monitoring Action 9

Location reference	Site name	Type[1]	NGR*
020	Cap's Cottages	P	TL 18400 09900
018	Fairfolds Farm	P	TL 18800 10100
059	Hatfield Quarry, WM1	M	TL 18800 08395
375	Symonshyde Quarry, W29	M	TL 2129010670
378	Symonshyde Quarry, W35	M	TL 20370 10445
379	Symonshyde Quarry, W36	M	TL 21100 10500
167	The Old Cottage, new bh	P	TL 21900 10700
191	M7, Mill Green Borehole	M	TL 23716 09780
005	Hatfield and London Country Club Workshop	P	TL 28200 08500
265	Park Street, Old Hatfield	M	TL 23410 08778
195	M10, Sleapshyde OBH	M	TL 20251 06887
010b	BH by Block 3 Glinwell's Nursery	P	TL 19500 07400
041	Ellenbrook@ North Orbital Road (A414	S	TL 20882 07164
292	R Lee, Water Hall gauging station	S	TL 29967 09978
101	River Lee downstream from Essendon Pumping Station (Holwell Bridge)	S	TL 27641 09814
142	Roestock P.S. (raw water sampling point)	PWS	TL 21000 05900
141	Tyttenhanger P.S. (raw water sampling point	PWS	TL 19800 05700
143	Essendon P .S. (raw water sampling point)	PWS	TL 27300 09800
144	Waterhall P.S. (raw water sampling point)	PWS	TL 29400 09500
298	Broadmeads PWS	PWS	TL 35300 13900
295	Amwell End PWS	PWS	TL 35800 13900
296	Amwell Hill PWS	PWS	TL 36700 12700
297	Amwell Marsh PWS	PWS	TL 37600 12300
301	Rye Common PWS	PWS	TL 37900 11100
MR	Middlefield Road PWS	PWS	TL 37400 09500
300	Hoddesdon PWS	PWS	TL 37800 08900
299	Broxbourne PWS	PWS	TL 37300 07500
302	Turnford PWS	PWS	TL 36000 04400

Notes to Table 3:
*Precise locations of abstractions are masked
[1] M - monitoring borehole, P - private water supply, PWS - public water supply, S - surface water

This action will be continued for up to a maximum of 10 years from the date of this remediation statement or the expiry of the period referred to in Remedial Treatment Action 10d below whichever is the sooner with reviews of the need to continue monitoring and of the extent of the monitoring every 3 years or such shorter period as may be agreed in writing by the Agency.

Continuation of scavenge pumping at Bishop's Rise

10. A Remedial Treatment Action will be undertaken in accordance with the requirements set out below unless varied in writing by the Agency:

a. **Continue to procure the existing scavenge pumping and treatment programme being carried out from the Affinity Water existing abstraction boreholes at Bishops Rise, Hatfield (Bishops Rise). For the purposes of this action the material features of the scavenge pumping and treatment programme are as follows:**

(i) Maintaining abstraction from Bishops Rise source. Seek to manage abstraction rates from Bishops Rise source on a day by day basis so as to optimise control of bromate and bromide, taking into account constraints imposed by the treatment process, operational considerations and the capacity of the receiving sewer system. Rainfall events have an impact on the attainable flows. Maximum rates of abstraction are 9 Ml/d (the licensed amount), with an average annual daily target of 3-6 Ml/d.

(ii) Dosing the abstracted water with ferrous chloride or an alternative suitable reducing agent of reasonable cost to reduce bromate in the water to bromide, if required.

(iii) Using a dedicated pipeline to remove the abstracted water to a trunk sewer system managed by Thames Water Utilities Ltd.

(iv) Monitoring water levels in the receiving sewer manhole and ensure that the discharge has no detrimental impacts on the sewer network.

(v) Implement agreed improvements proposed in Action 7a(vi).

b. **Continue to procure monitoring, or carry out monitoring in agreement with the Water Companies, as follows:**

(i) Monitoring at the locations and frequencies in Table 4 and Table 5 below for the parameters in Table 2 above and to the detection limits, precision and bias set out in the Method Statement specified in Action 8 above, unless otherwise agreed in writing by the Agency.

(ii) Monitoring of bromate and bromide weekly, or at such other frequency as may be agreed in writing by the Agency, in the final effluent at the receiving sewage treatment works, Blackbirds and Maple Lodge.

(iii) Reporting of the results of monitoring, under 10a(iv) to 10b(ii) above, to the Agency and in accordance with a scheme of reporting that has been agreed in writing by the Agency.

c. **In connection with this action the following definitions shall apply:**

(i) "procure" shall mean payment quarterly in arrears as follows:

To Affinity Water Ltd, all the costs solely attributable to pumping and treatment of bromate-contaminated groundwater, and associated costs of monitoring (at the locations and frequencies designated for Affinity Water in Table 4 and Table 5 below) and management.

To Thames Water Utilities Ltd, all costs solely attributable to disposal of the treated groundwater by foul sewer and associated costs of monitoring (at the locations and frequencies designated for Thames Water Utilities Ltd in Table 4 and Table 5 below) and management

(ii) "Remedial End Point" shall, unless otherwise agreed by the Agency incorporating the outcome from Assessment Action 7 above, mean in relation to Relevant Abstraction Points:

1. A concentration of bromate less than or equal to 5 µg/l.
2. A concentration of bromide less than or equal to 500 µg/l.

Note: These concentrations are the Required Concentration Standards in the First Notice dated 22 July 2009.

(iii) "Relevant Abstraction Points" shall (unless otherwise agreed by the Agency) mean the public water supply sources and associated monitoring points listed in Table 4 below.

d. **This action will be continued for the period defined by whichever is the shortest of 10d(i) or 10d(ii) or 10d(iii) below:**

(i) Until an alternative Remedial Treatment scheme has been approved by the Agency, implemented and shown to be effective in controlling concentrations of bromate at the Relevant Abstraction Points without any associated adverse environmental consequences;

(ii) Until the Appropriate Person(s) demonstrate that the Remedial End Point has been achieved and can be maintained in the raw water abstracted from all the Relevant Abstraction Points without the continuation of such pumping at Bishops Rise;

(iii) Up to a maximum of 10 years from the date of this remediation statement, or such shorter period as may be agreed in writing by the Agency with a substantial review of the need to continue scavenge pumping and/or other Remedial Treatment 5 years after the date of this remediation statement.

Table 4. The Relevant Abstraction Points to be monitored in connection with Remedial Treatment Action 10

Loc ref	Site name	Type	NGR	Designation[1] in relation to payments for monitoring	Frequency
143	Essendon	PWS	TL 27300 09800	Affinity	Weekly
298	Broadmeads	PWS	TL 35300 13900	TWUL	Fortnightly
295	Amwell End	PWS	TL 35800 13900	TWUL	Fortnightly
296	Amwell Hill	PWS	TL 36700 12700	TWUL	Fortnightly
297	Amwell Marsh	PWS	TL 37600 12300	TWUL	Fortnightly
301	Rye Common	PWS	TL 37900 11100	TWUL	Fortnightly
MR	Middlefield Road	PWS	TL 37400 09500	TWUL	Fortnightly
300	Hoddesdon	PWS	TL 37800 08900	TWUL	Fortnightly
299	Broxbourne	PWS	TL 37300 07500	TWUL	Fortnightly
302	Turnford	PWS	TL 36000 04400	TWUL	Fortnightly
103	Chadwell	S	TL 34997 13683	TWUL	Fortnightly
S = surface water, PWS = public water supply,					

Note to Table 4: [1] Affinity - Affinity Water, TWUL - Thames Water Utilities Ltd

Table 5. The additional locations to be monitored in connection with Remedial Treatment Action 10

Loc ref	Site name	Type	NGR	Designation[2] in relation to payments for monitoring	Frequency
001	Bishops Rise	PS	TL 22000 07700	Affinity	Weekly
382	Lynch Mill Spring	S	TL 37711 08519	Monitoring is carried out by the APs	Quarterly
288	Stream from Arkley Hole spring, upstream of confluence with Lee	S	TL 28976 10021	Monitoring is carried out by the APs	Quarterly
GB	River Colne at Green Bridge	S		Affinity	Monthly
ML	Maple Lodge sewage treatment works final effluent	E		TWUL	Weekly
BB	Blackbirds sewage treatment works final effluent	E		TWUL	Weekly
S = surface water, PS = pumping station, E = Sewage effluent					

Note to Table 5: [2] Affinity - Affinity Water, TWUL - Thames Water Utilities Ltd

Annual Reports

11. An Assessment Action will be undertaken as below:

Provide annual progress reports to the Agency in writing to include reviews of:

(i) the effectiveness of remediation;
(ii) the evolution of the plumes; and
(iii) the need for continuing or further active measures.

This action will be completed within 15 months of this remediation statement and every 12 months thereafter until the expiry of the period referred to in Remedial Treatment Action 10d above and unless otherwise agreed in writing with the Agency.

Appendix 1 – Illustrative Flow Chart

Appendix 2 – The agreed apportionment of the costs between the Appropriate Persons

Created by AT 11/12/2020 and checked against the signed RS dated 24/09/2020

Date: 2020

……..…

Keith Spence,

Environment Agency

……..…

Ross Halley

Redland Minerals Limited

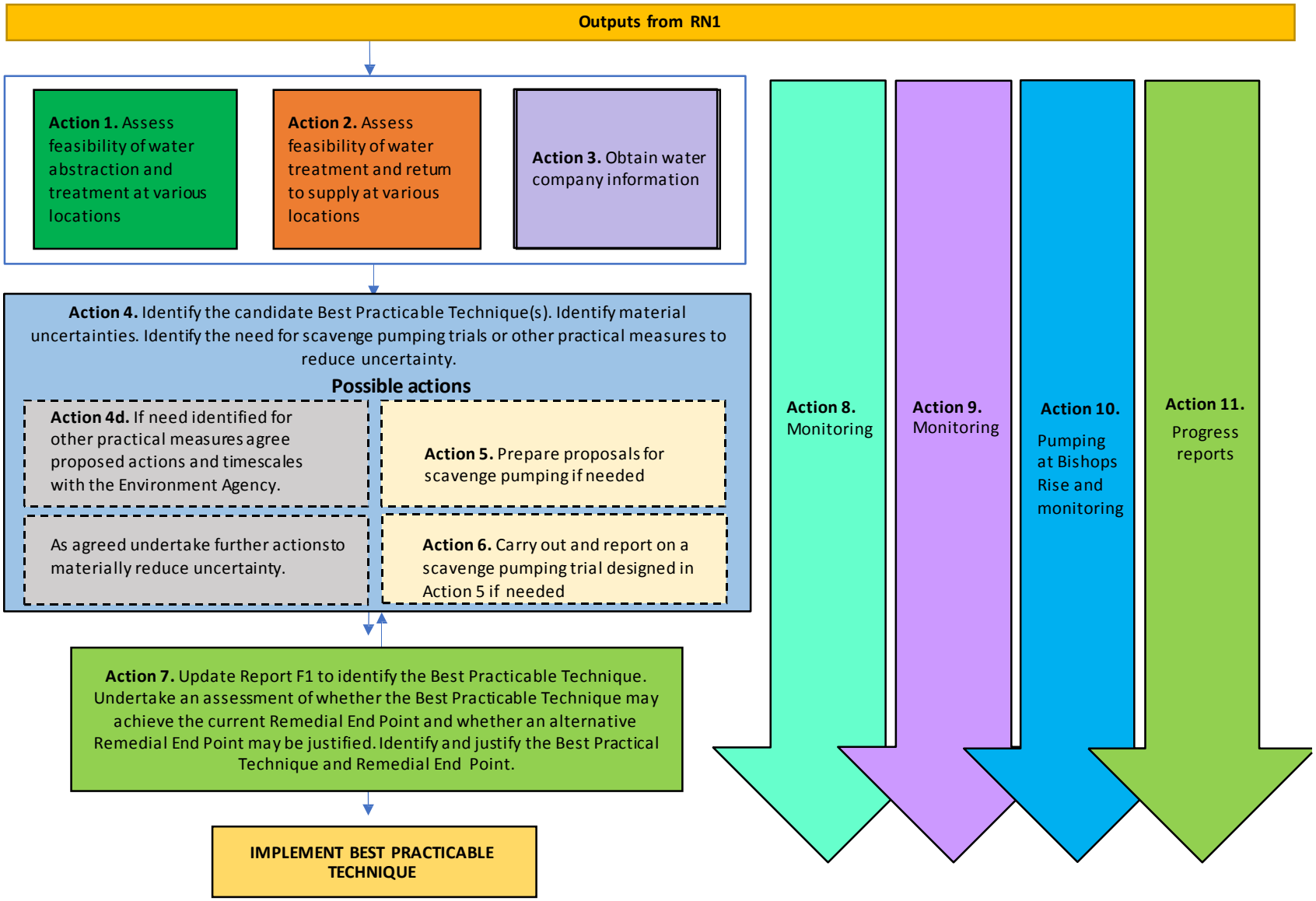
……..…..

Kevin Maguire

Crest Nicholson Residential Limited

Created by AT 11/12/2020 and checked against the signed RS dated 24/09/2020

Illustrative flow chart



Appendix 2

Proportion of Overall Costs to be borne under the Remediation Statement

Redland Minerals Limited

Redland Minerals Limited bear 85% of costs associated with the bromate significant contaminant linkage (SCL) and 45% of costs associated with the bromide SCL that is

Actions 1, 9, and 10: 85% of these Single Linkage Actions as they are associated with the bromate SCL only.

Actions 2, 3, 4a to 4c, 5, 6, 7, 8 and 11: 65% of these Shared Common Actions.

Action 4d: 85% if the actions under 4d relate to further investigations or assessments relating to the bromate SCL. 65% if the actions under 4d relate to further investigations or assessments relating to both the bromate and bromide SCLs.

Crest Nicholson Residential Limited

Crest Nicholson Residential Limited bear 15% of costs associated with the bromate significant contaminant linkage (SCL) and 55% of costs associated with the bromide SCL that is

Actions 1, 9, and 10: 15% of these Single Linkage Actions as they are associated with the bromate SCL only.

Actions 2, 3, 4a to 4c, 5, 6, 7, 8 and 11: 35% of these Shared Common Actions.

Action 4d: 15% if the actions under 4d relate to further investigations or assessments relating to the bromate SCL. 35% if the actions under 4d relate to further investigations or assessments relating to both the bromate and bromide SCLs.

Consequential implementation works

It should be noted that where any implementation works are required consequent upon this voluntary remediation statement then such costs shall be borne as follows:

Redland Minerals Limited	85% in relation to the bromate SCL 45% in relation to the bromide SCL
Crest Nicholson Residential Limited	15% in relation to the bromate SCL 55% in relation to the bromide SCL

In the event of implementation works being required to address both SCLs and where they meet the criteria for Shared Common Actions then such costs shall be borne as follows:

Redland Minerals Limited	65%
Crest Nicholson Residential Limited	35%

NOTE
Shared Common Actions in the above are those referable to both bromide and bromate, and are Actions which would have been part of the remediation statement for each of the bromide and the bromate SCLs had they been addressed separately.